

THE IMPACT OF GASEOUS TRITIUM DISPOSALS

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Disposals of tritium to air from a tritium processing plant in Chapelcross, Scotland, UK, has resulted in tritium being ubiquitous in and around the local site. The tritium processing plant was operated between 1980 and 2005 and the plant is currently undergoing Post Operational Clean Out (POCO). Although the dose per unit intake for tritium is low the detection of tritium in rainwater and routine environmental monitoring programmes conducted by the site and the regulator has drawn public interest in the fate of tritium in the environment.

Chapelcross nuclear site has an authorisation for gaseous and liquid disposals of tritium. As part of a general monitoring programme at Chapelcross samples of rainwater have been collected weekly and analysed for tritium by the Chapelcross site operator, however due to the operational requirements of the plant these have often been episodic releases of tritium rather than a continual release.

A routine programme of environmental monitoring around the site has been conducted for a number of years which was targeted to assess doses to the representative person (formally known as the critical group). This programme includes sampling and analysis of foodstuff from around the site and has reported no significant individual doses to the representative person (critical group). Following a general enquiry about the concentrations of tritium around the sites surface waters (which are not drinking waters) a specific targeted monitoring investigation was commissioned. This monitoring programme reported a distinctive footprint of tritium disposals on the surface waters around the site which had not been widely reported previously. The investigation showed that the effects of tritium disposals be seen in and around the site extending to the Winterhope reservoir some 20 Km north west of the site. Thus atmospheric releases of tritium have resulted in elevated¹ tritium concentrations in surface and groundwater on and in the locality of the site.

Although none of the concentrations of tritium in the environment gave cause for concern from a health viewpoint and it is known that the discharges of tritium from the site was in compliance with the requirements set in its authorisation, the positive identification of tritium in the environment it has resulted in significant local interest in the fate of gaseous disposals and longevity of tritium in the environment. Further, the observation of the potential impact of episodic releases on the local environment has been considered further in reviewing the

¹ General levels of tritium in surface and drinking water in the UK are recorded in RIFE² at below 4 Becquerels per litre (Bq/l).

routine programmes for radioactivity monitoring undertaken to assess doses to man and the environment.

This paper report summarises the position to date with regard to tritium on and around the Chapelcross site and potential implications for routine monitoring programmes.